

Abstract of the Disclosure

Methods and apparatus for performing biometric identification or verification of identities using optical spectroscopy of tissue. Tissue optical spectra can be obtained by projecting optical radiation into skin and capturing the light transmitted or reflected back and out through the tissue. The tissue spectra collected preferably includes primarily light that has passed through skin tissue below the epidermis. Multiple tissue spectra and identities can be collected from one or more individuals. These tissue spectra can be analyzed on a computer, and the spectral features that are most important for classifying person-to-person differences can be established using principle component analysis, linear discriminant analysis, or a variety of other related techniques. One or more tissue spectra and identities can be collected from individuals for whom identification or verification may later be desired. A target individual seeking identification or verification can submit a suitable tissue site for spectroscopic measurement. In addition a target individual seeking identity verification can submit a purported identity using some means such as a typed user name, PIN code, magnetic card, transponder, etc. Similarity between the target spectrum and the spectrum or spectra in the enrolled spectral database with respect to the inter-person classification spectral features is determined and identification or verification is granted based on the degree of similarity.

STATEMENT UNDER 37 CFR 110: The undersigned hereby certifies that this paper or papers, as described hereinabove, are being deposited in the United States Postal Service "Express Mail Post Office to Addressee" having an Express Mail Mailing label number of:

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on this 11<sup>th</sup> day of April 2001  
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